USGS
science for a changing world

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SIMPLY SPATIAL

RMMC'S RESEARCH AND SCIENCE NEWSLETTER

INSIDE THIS ISSUE:

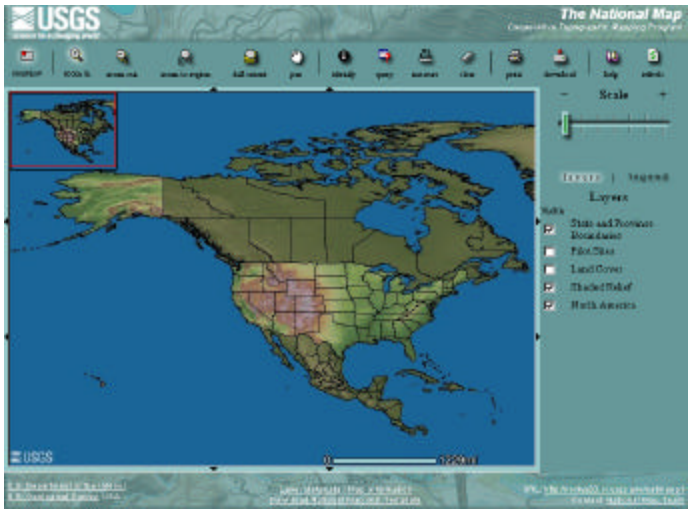
From the Editors:

Welcome to the first edition of Simply Spatial! While the name may change, the purpose of this newsletter will not. This is our attempt to share with all of you the exciting projects that we (the Research, Technology and Applications Branch of the Rocky Mountain Science/ Mapping Center) have been working on each month. Hi-lights of each project will be presented, along with contact information, if you wish to find out more about any of the topics presented. Of course, you can also contact either of the editors to provide feedback. We appreciate hearing from you, letting us know what you liked, what you didn't like, and what you would like to see more of. Thank you for your time and happy reading!

THE NATIONAL MAP VIEWER

One of the key objectives of *The National Map* is to provide easy access to geo-spatial information. *The National Map* viewer successfully meets this goal by providing a web-enabled portal to all of the geo-spatial information contained in *The National Map.* This portal supports online access to geo-spatial information, digital data downloads, and cartographic product generation. RMMC is the lead center for the implementation of *The National Map* viewer, which is scheduled to go public in October 2002.

A division-wide design group established the "look and feel" and functionality for *The National Map* viewer. RMMC took responsibility for developing, implementing, and hosting the application. The viewer contains USGS national datasets and links to each of the completed pilots.



The October release will contain all of the national "framework" data and data for seven FY02 pilot activities. After October RMMC will continue to lead the division effort to enhance the viewer with both additional data and advanced functionality.

Public release of the first version of the viewer is only one step towards meeting all of the challenges associated with *The National Map*. However, it provides an opportunity to reflect on the progress that has been made, and reaffirm to both ourselves and to our customers the commitment USGS has made to the concepts of *The National Map.* The URL for the viewer is: http://rockys20.cr.usgs.gov/natmapp1.

For more information contact: **Jill Cress (jjcress@usgs.gov)**

NORTHCOM—WHAT IS IT AND WHY IS IT IMPORTANT TO ME?

A new term that has been added to the RTA lexicon is NORTHCOM, which is short for North America Command. Located in Colorado Springs at Cheyenne Mountain, NORTHCOM is an office created as part of the reorganization of U.S. Intelligence resources under the Homeland Security. USGS received a request from the National Reconnaissance Office via the Civil Applications Committee to have *Joe Sadlik* provide liaison and technical consultation with and between NORTHCOM and USGS. Congratulations are thus extended to Joe on this nomination.

For more information contact: **Mike Hutt (mehutt@usgs.gov)**

Fulbright Scholar

Monica Ruiz-Bustos, a Fulbright Scholar from Spain, started on September 19 in RTA and will be with us for the next year. Her professional interest is mapping applications of high-resolution satellite sensors.

She has a BS degree in electrical and computer engineering and was employed by the Spanish Ministry of Public Works as a Geographer Engineer within their Remote Sensing Unit. Ms. Ruiz-Bustos will be working with Ralph Root on a variety of remote sensing projects. Please join us in welcoming Monica Ruiz-Bustos to the USGS.

Upcoming Events

SEPT. 23-27: LAND COVER TRENDS TRAINING WORKSHOP – SIOUX FALLS, SD

SEPT. 30-OCT. 2: NATIONAL ASSOCIATION OF FORESTERS CONVENTION – BURLINGTON, VT

OCT. 8-10: GIS IN THE ROCKIES – DENVER, CO

OCT. 21-23: AML WORKSHOP - DENVER, CO

OCT. 21-24: GAM SCIENCE MEETING – RESTON, VA

NOV. 4-7: ITEM – DENVER, CO

NOV. 10-15: PECORA'S REMOTE SENSING SYMPOSIUM - DENVER, CO

NOV. 13-15: USGS WILDLAND FIRE WORKSHOP – DENVER, CO

LAND COVER TRENDS: ON THE ROAD AGAIN

Members of the Land Cover Trends (LCT) team had a reprieve from image processing during the 2002 field season. Fieldwork kicked off in June when *Bev Friesen* met up with LCT team members in Knoxville, Tennessee, to explore the southern extent of the Ridge and Valley, and Central Appalachian ecoregions. *Mark Drummond* joined team members from EDC and MCMC in Denver to travel the Western High Plains in the heat of July. The trip also included such highlights as sampling the cuisine of the ecoregion. As Tom Loveland reported during the trip, "We've set new records for dining. We're on a hole-in-the-wall quest, and the hole is winning!!" Field work concluded for the Denver team in August when *Steve Blauer* journeyed to Maine for field work in the Laurentian Plains and Hills (ask to see his video), and *Bev Friesen* and *Keith Landgraf* flew to San Francisco to partake of the Coast Range while traveling up the winding roads from California to Washington.

For more information contact: **Bev Friesen (bafriesen@usgs.gov)**

IFSAR DATA ACQUIRED OVER HAYMAN FIRE SITE

Interlay Techologies, under the auspices of the USGS Cartographic Services Contract, acquired Interferometric Synthetic Aperture Radar (IFSAR) data over the Hayman Colorado wildfire site on August 9. The data will provide a more detailed and accurate representation of the actual terrain and surrounding environment that was affected by the June 2002 wildfire. A team of USGS scientists is eagerly anticipating the arrival of the processed data and plans to incorporate it into a variety of applications, including topographic map revision, sedimentation erosion studies, and flood potential investigations. The resultant data sets will be incorporated in the National Elevation Data set component of *The National Map.* These data represent a significant USGS contribution to the post fire restoration and rehabilitation effort over the Hayman site.

Intermap has also decided to acquire a select set of data using a new experimental "P-band" sensor that has the ability to penetrate the surface and provide sub-surface reflection. If the new sensor performs as expected, the data may eventually help assist scientists to more efficiently determine soil depth (to bedrock) over the 137,000-acre site than costly ground surveys.

For more information contact: **Tom DiNardo (tpdinardo@usgs.gov) or John List (jlist@usgs.gov)**

FEMA POST WILDFIRE RECONNAISSANCE MAPS

In July, the USGS was tasked by FEMA and its collaborators to construct Post Wildfire Reconnaissance Maps covering sixteen of Colorado's most critical burn sites. The maps are being used by various emergency and recovery agencies to assess the potential risks to lives and property from flood and erosional processes. The maps depict the fire burn perimeter and burn severity overlain on a topographic and planimetric base. Their purpose is to show the location and proximity of the burn area to a variety of natural and man-made features, and to identify areas for more detailed hydrologic and hydraulic analysis. This detailed analysis has already begun over the Hayman burn area, and is scheduled to include the Missionary Ridge site near Durango and the Coal Seam site near Glenwood Springs in FY 2003. A wide variety of geo-spatial data for all Colorado wildfire sites can be found at: http://rockys20.cr.usgs.gov/hayman

For more information contact: **Tom DiNardo (tpdinardo@usgs.gov) or Catherine Costello (ccostello@usgs.gov)**

OMB VISITS RMMC, RTA WOWS 'EM

Several RTA employees were called upon to "strut their stuff" for OMB and USGS Headquarters visitors in early August. Participating in a four-day series of briefings, site visits, tours, and presentations were *Tom Owens, Liz Lile, Dave Hester, Jill Cress, Stan Wilds, Dave Catts, Catherine Costello, Mark Drummond, Sherry Durst, John Kosovich, Mike Hutt,* and *Tom DiNardo*. The response of visitors Jason Friehage and Linda Hicklin was very positive to RTA presentations on *The National Map* viewer, Ecosystem visualization techniques, Edwards Trinity landscape change study, Land Cover Trends, GeoMAC, FEMA fire reconnaissance mapping, IFSAR/LIDAR data applications, fusion and visualization, and related GAM, LRS and CTM initiatives. The breadth and depth of RTA's expertise and engagement was strongly acknowledged.

For more information contact: **Mike Hutt (mehutt@usgs.gov) or Tom DiNardo (tpdinardo@usgs.gov)**

LANDSCAPE CHANGE FOR NORTHERN COLORADO FRONT RANGE

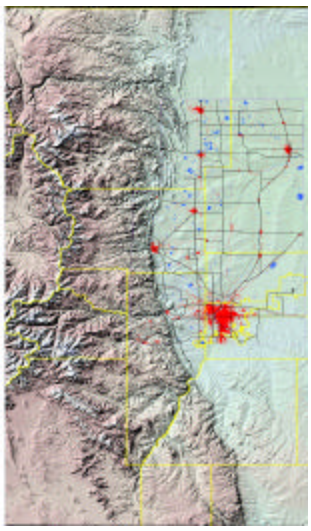
Today's landscape is the culmination of human activities on the landscape: evolving technology, shifting patterns of land use, and changing cultural priorities. As competition for urban land and resources becomes more intense, the need to understand, model, and analyze both natural and human-induced environments in an integrated fashion is essential.

The Systematic Landscape Analysis and Modeling project is working on identifying key metrics to describe and model landscape change. These metrics will be used for a nation-wide assessment of landscape change.

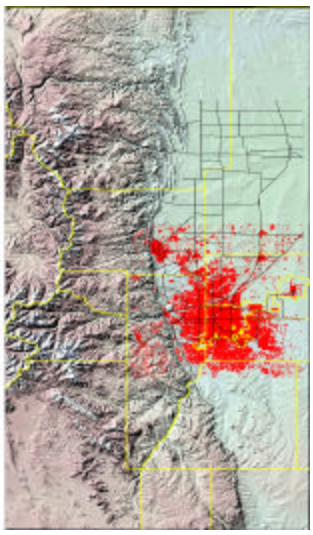
A poster of the urban development along the Northern Colorado Front Range was presented at the Central Region Open House at the Fort Collins Science Center on the Colorado State University Campus in Fort Collins. (The poster is hanging on the wall of the RMMC GIS Lab.)

Four temporal images of urban development in the Northern Colorado Front Range were provided to several members of the media in response to public interest in the proximity of this year's wildfires to metropolitan areas. These media organizations included ABC Nightly News, KUSA (NBC local affiliate), the Denver Post, and the Fort Collins Coloradoan. The local media also included interviews with RMMC scientist *Carol Mladinich*. Logon to http://rockyweb.cr.usgs.gov/frontrange/ to find out more about USGS infrastructure resource activities along the Colorado Front Range.

For more information contact: **Carol Mladinich (csmladinich@usgs.gov)**



Denver 1937



Denver 2000

New Faces

RTA has been fortunate to have several new scientists join the organization over the past few months. Simply Spatial would like to acknowledge the following.....

Stacy Welding – Stacy comes to RTA via the Orkand contract and is working on the Systems Approach to Landscape Analysis and Modeling project.. Stacy is from Longmont, Co. and recently received a degree in Geography from the University of Colorado – Boulder. Stacy was previously at RTA as a student intern in the fall of 2001.

Mark Bauer - Mark also joins the National Map and Web Mapping development team and has already made significant contributions to the National Fire Plan web site Fuels Conditions and FEMA fire reconnaissance maps.

Alexis Ellis – Alexis rejoins the RTA staff after a brief interlude and has been reassigned to the National Map and Web Mapping development and data integration team. Alexis was instrumental in helping to produce the fire reconnaissance map for FEMA. So glad to have you back Alexis!

Jeff Sloan – Jeff comes to RTA via a recent merit promotion announcement. He has an outstanding record of accomplishments in the areas of advanced classified systems, wildland fire geo-spatial data support and mapping, and data integration operations.

New Faces

(continued)

Sandy Walters – Sandy has extensive data base management, administration and stewardship experience particularly with Oracle and SDE technologies. Sandy served as the ODB data base manager and most recently has been supporting the GeoMAC data base management environment.

David Hughes – Dave joins the branch and most importantly, the NHD Geodatabase development project. Dave brings a wealth of knowledge and expertise in advanced software and data base management development languages and methodologies.

Lori Baer – Lori comes to RTA from Production where she tested and implemented the new ESRI Production Line Tool Set (PLTS) for creating NIMA 50K topo line maps. She has extensive knowledge of elevation data (DEMs, LIDAR, IFSAR), and has been providing GeoMAC data support for the past few years.

Simply Spatial would also like to congratulate ***Sherry Durst, Maria McCormick***, and ***Joe Sadlik*** on their recent promotions to GS-12s.

Fond Farewells

Dan Custer took a position with the Department of Labor.

Richard Pelltier took a position with the Geologic Discipline.

USGS Fire Response—A Prime Time Media Event

Media exposure resulting from USGS participation in wildfire suppression and recovery activities this fire season continues to grow. At the height of the Colorado fire season this past June, RTA scientists *Liz Lile* and *Stan Wilds* were interviewed by KUSA (Ch. 9) explaining the use and value of GeoMAC in providing citizens and other governmental organizations timely information about the location and descriptions of the more than 20 wildfires that were underway. GeoMAC's contribution to the western wildfire fighting effort was further outlined in the July 4 late edition of the New York Times and was showcased in a variety of weekly and monthly periodicals and magazines such as Newsweek and GeoWorld. *Tom DiNardo* was interviewed by KCNC (Ch. 4) and KMGH (Ch. 7) about USGS's commitment to assist in post fire recovery and rehabilitation efforts for FEMA and others by acquiring more detailed and accurate terrain information over the Hayman fire site. USGS's partnership with Intermap Technologies to acquire these new mapping data was reported in both the Denver Post and Rocky Mountain News. The GeoMAC website can be found at: www.geomac.gov

For more information contact: **Mike Hutt (mehutt@usgs.gov) or Tom DiNardo (tpdinardo@usgs.gov)**

Science Data Store Version 1 is Released

The Science Data Store (SDS) is a web-based clearinghouse, warehouse, and data delivery system for USGS geo-spatial and scientific research data. SDS Version 1 was released on August 22. Its lead developer, *Susan Goplen*, gave a demonstration to the GAM group via a NetMeeting connection during their August conference call as well as to RMMC researchers. Researchers at RMMC have begun registering and storing data in the system. During this early release period only NMD employees are being allowed to actually register and store data. The URL to the system is: http://rockys20.cr.usgs.gov/sds

For more information contact: **Susan Goplen (segoplen@usgs.gov)**

Briefings Given to DOI Officials

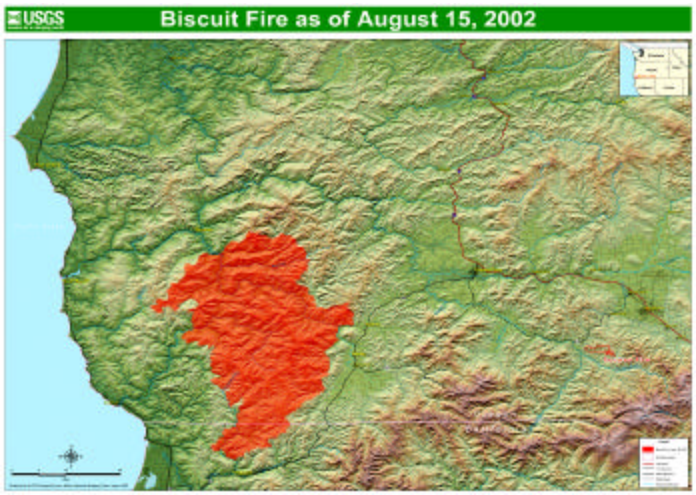
Tom Weimer, Assistant Secretary for Water and Science, Jim Devine and Bruce Molina, USGS, were briefed on GeoMAC and related USGS fire suppression and recovery support efforts during separate visits to Denver. The capabilities of RTA and its collaborators and partners (Forest Service, BLM, etc.) were described and demonstrated in a series of half-day briefings and discussions. Within 2 weeks of his visit, the Assistant Secretary's Office tasked RTA to provide maps of the Rodeo-Chediski fire complex in Arizona for a pending visit by the Secretary of the Interior.

For more information contact: **Mike Hutt (mehutt@usgs.gov)**

BISCUIT FIRE

On August 22, President Bush; Secretary of the Interior, Gail Norton; and Secretary of Agriculture, Ann Veneman, visited areas in Oregon that have been devastated by wildfires this summer. A poster size map portraying the Biscuit Fire, Oregon's largest fire in recorded history, was displayed during a press briefing in which the President presented his initiative, "Healthy Forests: An Initiative for Wildfire Prevention and Stronger Communities." This initiative will implement core components of the National Fire Plan's 10-year Comprehensive Strategy and Implementation Plan. The map contained the fire perimeter, hydrography, transportation, communities, state boundaries, and a color shaded relief image showing the total extent of Biscuit Fire as of August 15 (more than 400,000 acres) and it's geographic situation to threatened communities in southwestern Oregon. This map was designed and produced by RMMC RTA using ArcMAP and archived data at the RMMC.

For more information contact: **Stan Wilds (srwilds@usgs.gov)**



FIGHTING FIRE WITH SCIENCE

On July 18, *Liz Lile* and *Mike Hutt* demonstrated the GeoMAC fire application to Congress at the USGS Fighting Fire with Science briefing on Capitol Hill. The briefing was held to show how the USGS is working with fire managers and land managers to bring fire science and technology to aid threatened communities and restore fire-impacted ecosystems. GeoMAC, a real-time Internet mapping system, provides wildland fire managers with a variety of data layers and on-line mapping capabilities for strategic planning and resource allocation. The system is also available to the public, allowing users to pinpoint the location and size of wildfires near their communities. The demonstration was well attended and well received. The GeoMAC website can be found at: www.geomac.gov.

For more information contact: **Liz Lile (ellile@usgs.gov) or Mike Hutt (mehutt@usgs.gov)**

FROM THE HELP DESK

RMMC's computing infrastructure continued its path to enhanced capabilities and capacity during the past summer. Improvements touched all areas of the infrastructure from servers and software to networks, workstations, and data storage.

Due to the nature of our data (large file sizes) and the need to have growing amounts of data on-line and easily accessible, our data storage needs have grown exponentially. We have tripled the amount of raw storage capacity in the last year alone.

To address this need, a Network Appliance F880 filer was purchased and is now in use. The filer has four terabytes of usable storage and can scale to six terabytes. The filer provides a highly available, high-performance storage solution that enables data access to users across the network. The Net App filer connects to the LAN via two-gigabit ethernet interfaces and provides simultaneous file system access to UNIX, Windows, and web-based servers and clients. The filer runs a custom operating system that is optimized to serve and manage data.

The next steps in deploying this storage solution will be to consolidate data currently stored across multiple platforms and storage devices and to optimize data backup and recovery schemes for the Net App filer.

For more information contact: **Brian Bradley (bsbradley@usgs.gov)**

RTA Graduate Students Return

Mark Drummond and *Catherine Costello* returned to work in June and promptly began making significant contributions to Land Cover Trends, FEMA/Fire applications, Coal Bed Methane, and Landscape Transformation studies. As USGS grad school alumni, *Tom DiNardo* says "They have returned educated, enthusiastic, and committed (for three times the length of their training)."

Pictures from the Hayman Fire just south of Denver (summer 2002)

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We're on the Web!
http://rockys20.cr.usgs.gov/newsletter

Letters to the Editors

Your letters, comments, and questions will be presented here.

IN THE SPOTLIGHT…

For the first edition of Simply Spatial, the editorial staff decided to focus the spotlight on the man who had the idea for this newsletter, *Tom DiNardo*, Chief of the Research, Technology, and Applications (RTA) Branch.

Tom's professional interest and focus is on pursuing and developing integrated science projects with other USGS disciplines, state and federal organizations, and academia. He is a strong advocate for innovative (i.e., "push the envelope") geographic research, and is an enthusiastic supporter of the land characterization and trends analysis activities. Tom feels the key to RTA success in this arena is a vigorous pursuit of "knowledge alliances" with other scientific partners. "Opportunities in interdisciplinary science will be realized through the collaboration of multi-disciplinary researchers and geo-spatial technologists. This is being manifested in projects such as Mancos Shale and Hayman where new visualization capabilities are being integrated with data analysis and modeling."

Tom's philosophy is that a necessary foundation for geographic research is effective management and dissemination of geo-spatial information. He sees the role of RTA in *The National Map* as design and development of the infrastructure, and exploitation of the data in support of real world applications. Examples of such applications include EPA emergency response, HUD Colonias, Middle Rio Grande, Abandoned Mine Lands, and the various fire applications.

Tom believes it is necessary to have a strong geo-spatial data infrastructure to succeed in providing the applications and research required by our customers. He is a primary sponsor and advocate for the Rocky Mountain Geography Node of which the Science Data Store (profiled in this newsletter) is a first component.

COLORADO WILDFIRES, SUMMER 2002